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ABSTRACT

Although reports on the positive effects of fitness and exercise predominate in the exercise literature, some researchers describe frequent exercise as compulsive or addictive behavior. This paper addresses these "negative addictions" of exercise. As early as 1970, researchers recognized the addictive qualities of exercise. Short-term studies on exercise found salutary effects on self-esteem and mood, but these studies tended not to continue long enough to detect an addictive process. However, case studies and experiments on the effects of depriving athletes of activity have documented the appearance of withdrawal symptoms. In the last decade, investigations into the psychological and addictive effects of exercise have become more common and numerous attempts to quantify the negative addiction to exercise have been attempted. Case reports can provide illustrative data on both the compulsive nature of addicted exercisers and potential causes. Research shows that the exercise addict continues to exercise despite medical, social, and vocational counterindications. Studies reveal that individuals become depressed when prevented from exercising and some reports suggest that periods of emotional stress may provoke addictions to exercise. Likewise, heightened physical activity is viewed as a common feature of eating disorders, such as anorexia nervosa. Researchers still do not understand the etiological mechanism behind addictive exercise. (RJM)

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Exercise and Compulsive Behavior

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Though reports in the exercise literature of the positive effects of fitness and exercise predominate, there have been a variety of accounts of a relation between embarking on a fitness program and some sort of compulsive, addictive quality to the activity.

Compulsive behavior usually refers clinically to behavior that is done to relieve intense anxiety, and which the individual feels unable to control. That definition is appropriate for what has been termed a "negative addiction" to exercising, in which the person continues to exercise at what many would consider an excessive level, often despite injury, inconvenience, or interference with other aspects of one's life. Since the late 1970's, sportsmedicine specialists have been seeing an increasing number of overuse injuries. For some individuals, the benefits of running or other exercise may be somewhat offset by what appears to be a "negative addiction."

As early as 1970, it was recognized that exercise could have addictive qualities for some people (Baekeland, 1970). While such addiction was initially seen as positive, since exercise usually had beneficial effects on the individual (Glasser, 1976), it was soon demonstrated that being addicted to physical activity could also have negative consequences (Morgan, 1979). One epidemiologic study reported in the Journal of the American Medical Association on the benefits and risks of running identified as benefits, quitting smoking and weight loss, and injuries, dog bites, collisions with vehicles, and

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being hit by thrown objects as risks (Koplan, Powell, Sikes, Shirley & Campbell, 1982). People continued to run despite the risks. De Coverley Veale proposed in1987 that exercise dependence be included as a dependence syndrome in DSM-IV, since it meets the criteria for dependence or addiction. For example, impairment of functioning as a consequence of dependence and negative affect in the absence of the addictive substance are criteria of dependence, both of which are present in addicted exercisers. This "negative addiction" syndrome has been contrasted with a more popular view of compulsive exercising as a positive addiction because of its salutary effects on self-esteem and mood. It appears likely that for some, a dependence on exercise has mostly positive effects, but for others, there are more major negative sequelae.

It is not clear how best to document the existence of compulsive exercising and its effects. Short term studies in which exercise is introduced in one group but not in a control group frequently find salutary effects on self-esteem and mood, but they tend not to continue long enough to detect an addictive process, which presumably takes longer to develop and become a problem. Many case studies and several experiments on the effects of depriving athletes of activity have documented the appearance of withdrawal symptoms, self-destructive behavior because the individual cannot go without an exercise "fix," and other evidence of a negative addiction or compulsion to exercise. Experiments also indicate that deprivation from activity removes the benefits of exercise, which for many may include regulation (and removal) of negative mood states such as

chronic anxiety and depression. In fact, the effects of exercise withdrawal seem to be the reverse of the beneficial effects of exercise.

Questionnaire comparisons of frequent exercisers with non-exercisers tend to find results ranging from little difference between them to healthier personalities in exercisers. Such studies generally do not include any assessment of addiction or compulsive behaviors, though. Several questionnaire studies which specifically sought evidence of addiction or compulsive exercise behavior did find evidence of "addiction." For example, a longer history of running was associated with more addictive symptoms in one study.

In the last decade, investigations into the psychological and addictive effects of running and other physical activity have become more common. For example, the experience of euphoria or "runner's high" and the less pleasant "hitting the wall" phenomenon have been taken beyond anecdotal reports through questionnaire assessments of large samples of marathon runners (e.g., Summers, Machin, & Sargent, 1983; Summers, Sargent, Levey, & Murray, 1982), and overtraining has now been shown to cause problems as well. These studies also indicate that many (more than 35%) of such high activity subjects report negative effects of their exercise, but persist nonetheless. Marital strain, injuries, psychological problems such as irritability and obsession with running, interference with work, and lack of time for other activities are reported by significant numbers (36%) of marathon runners, and 82% in one study acknowledged that they had at least some level of addiction to running. Some speculate that the pain of running long distances may be utilized as some sort of narcissistic, masochistic way to improve self-esteem and gain social approval, thus overcoming the negative effects.

Attempts to quantify specifically the negative addiction to exercise have been made. In one study, addiction level correlated negatively with self-esteem and positively with anxiety. Injury was also found to be significantly related to addiction (Rudy & Estok, 1989). Scores on a negative addiction scale were found to increase with length of running history, indicating a possible progression through stages of addiction (Hailey & Bailey, 1982). It should be noted however, that even among the runners who had run the longest, some scored low on the negative addiction scale. Not everyone who exercises avidly develops a negative addiction. It is thus important to identify what produces negative addiction, and who is most likely to develop the problem.

Little examined a group he called "athletic neurotics" and compared them with other neurotics and normal controls in1969 and1970. These patients seemed to have what is now termed exercise addiction, which was thwarted by injury or illness so that exercise (for coping with stress) was no longer possible, triggering severe psychiatric disturbance. It seemed that these individuals probably had mood disorders before they began their athletic activities, but were able to cope through exercising. When they became incapable of continuing this activity, their pre-existing psychiatric problems resurfaced and required treatment. Little's interpretation of this seems timely and accurate. He suggested that athleticism in and of itself is not problematic, but that overvaluation of physical prowess may make individuals vulnerable to this neurotic syndrome in the course of natural aging, as activity becomes less feasible, and approaching mortality must be faced.

Case reports provide some illustrative data on both the compulsive nature of addicted exercisers, and potential causal factors. Morgan (1979) used 8 case studies to illustrate the negative aspects of exercise addiction. He defined addiction as present if the person feels compelled to exercise daily and feels unable to live without it, and when deprived of exercise, experiences withdrawal symptoms including anxiety, irritability, and depression. Negative addiction also leads to deterioration of interpersonal relations at home, work, and social settings. Other symptoms often present include restlessness, insomnia, fatigue, tics, muscle tension and soreness, decreased appetite, and irregularity. The true addict continues to exercise despite medical, social, and vocational counterindications. As with drug addiction, the exercise addict also must increase the "dosage" or amount of activity to get the same high. For example, Chalmers et al. (10) reported the case of a woman who exercised compulsively despite serious leg injuries and amenorrhea. The exercising took all her spare time, she felt fat (at only 81% of normal weight), she even took a day off work after Christmas to exercise off the calories she consumed on the holiday. A similar case was reported (Waldstreicher, 1985) of a patient who was hospitalized for a suspicious hip fracture for which the doctor planned to do a bone biopsy. The real cause of the patient's injury and pain was 2-3 hours per day of exercise, which she did not stop performing even when she (a nurse!) knew that she was injured. Fear of gaining weight motivated this excessive exercising, although the patient was normal weight. Excessive activity seems sometimes to promote addiction; moderation in exercising is desirable, as in most other activities.

Yates (1991; et al., 1983) presents cases of exercise addiction based on a large number of in-depth interviews. She encountered a number of runners who seemed obliged or compelled to run. They were attempting to control their bodies through exercise, but became obsessed with physical activity. Their lives revolved around doing the activity, thinking about it, reevaluating past performances of it, and planning future occasions. These athletes continued exercising despite discomfort from bad weather or physical pain, injuries from car accidents or thrown objects, job and interpersonal losses because of time spent exercising, or activity-induced injury. When prevented from exercising by serious illness or injury, these athletes described serious depressive reactions, anxiety, and sensations that their bodies were deteriorating or fragmenting. In other words, all the negative sequelae of exercise addiction described thus far were present in Yates' subjects. Yates did note, though, that these pathological obligatory runners are a minority of the committed runners she interviewed over a period of about 7 years. The obligatory runners also seem to perceive benefits from their activity which compensate for the costs and keep them involved in exercising.

Sacks (1981) described a case that suggests that periods of emotional stress may provoke addiction to exercise. Physical activity can be used as a coping response to losses to self-esteem or emotional distress which may become obsessive when stress increases (as with Little's athletic neurotics). Another instance of this is provided by two cases of obsessive exercising becoming full-blown psychotic episodes (DeFries, 1981). In these two women,

running had been used to shore up shaky self-concepts and to defend against serious depression. When these attempts at pseudo-identity failed or the stress of particularly strenuous running was unendurable, these women lost control of themselves and became psychotic. Katz (1986), similarly described 2 case studies of patients where long-distance running seemed to play a role in the onset of clinical mood and eating disorders. Forced reduction of running in these patients was associated with depression and bulimia. The depression which appeared in these 2 men when their running had to be decreased might have resulted from reduced endorphins or from their using running to mask an underlying depression (for which both had positive family histories). Excessive exercising thus may not be an ideal long-term solution to life stress.

Compulsive exercising is often described as a clinical feature of anorexia nervosa. Some have argued that addiction to exercise is merely a variant of anorexia nervosa (e.g., Yates) while others (e.g., DeCoverly Veal, 1987) distinguish between primary exercise dependence and that which is secondary to a pre-existing eating disorder. Excessive exercise may be the presenting feature of an eating disorder but this seems to represent secondary dependence, with the eating disorder the primary diagnosis. In their desperate attempts to lose weight, anorexic patients frequently exhibit hyperactivity. Self-induced weight or fat loss is also present in many dependent exercisers as a means of improving performance, but no morbid preoccupation with weight is present in these individuals, distinguishing them from those with an eating disorder.

One anorexic patient from my own practice insisted upon running ten miles a day, swimming two miles, and often added an hour of racketball or a bicycle ride. She felt compelled to do this intense regimen for fear that she would gain weight and "blimp up like a balloon" if she stopped. When an injury to her ankle finally prevented her from running, biking, or playing racket sports, she was amazed to find that she gained only 6 pounds. After her injury healed, she announced that it was not worth all the pain and trouble to continue her hyperexercising for a mere 6 pounds! Another patient admitted that she never enjoyed the 5-15 miles she walked or 30-50 miles she forced herself to bicycle every day, but felt she had to do this.

Many anorexic patients have to be prevented from exercising even when they are hospitalized for their emaciation. For this clinical group, exercise addiction is clearly part of a larger pathological picture. There is some evidence, however, that in some cases, the initiation of a fitness or exercising regime, or social pressure to reduce fatness in order to improve athletic performance triggered the eating disorder (DeCoverly Veal, 1987; Smith, 1980). Increasing societal attention to exercise may lead to greater use of this instead of dieting to regulate body shape, mood, and self-esteem. As the anorexic patient illustrates, this may be a recipe for serious pathology, just as overemphasis on dieting has been.

There are four main arguments concerning the relation between physical activity and eating disorders: 1. Anorexia and Bulimia Nervosa may be precipitated by exercising, just as they are thought to be triggered by restrictive dieting (as, for example,

Rowley (1987) speculated). 2. Eating disorders and compulsive exercising are related variants of a similar pathological process, and may even be mistaken for each other (as in the Waldstreicher case (64) presented above). 3. Hyperactivity in eating disorder patients is merely a technique for losing weight by burning off calories, and all other resemblences are unimportant. 4. Exercise addiction is a form of anorexia nervosa.

A related problem concerns the apparent link between compulsive exercising and pathological dieting practices which may presage the onset of an eating disorder. Pathological dieting practices have been found with disturbing frequency among competitive college athletes. Older athletes and coaches are frequently role models who encourage these techniques, and reassure the athletes that no harm will result from their use. It should be noted that it is not only gymnasts and distance runners who show these behaviors--a golfer, a swimmer, tennis players, field hockey players (1/2 the team), and softball players in one study (Rosen, McKeag, Hough, & Curley, 1986), and a high proportion of the male and female swim teams in another (Dummer, Rosen, Heusner, Roberts, & Counsilman, 1987) all acknowledged using one or more pathogenic weight control techniques such as vomiting or laxative abuse. It appears that any feedback to an athlete that she is too fat may trigger these sorts of pathological dietary practices. More ominously, although it is most prevalent in sports where thinness is emphasized, compulsive dieting is clearly prevalent among athletes even when thin body shape is not a focus of the sport.

Negative Addiction to Exercise: Conclusion

Some athletes apparently feel compelled to exercise, even when they acknowledge that the activity is harmful to them. Case reports, surveys, and studies of committed athletes all concur that significant numbers of exercisers report continuing with their exercise despite pain, interference with significant relationships and/or work, lack of time for other leisure pursuits, and recognized obsession with the activity and other psychological problems. In addition, those who seem addicted to activity also often show compulsive behaviors around this activity, maintaining rigid schedules of training, ritualized warm-up routines, obsessive record keeping about activity levels, and guilt about missing a scheduled activity session. This obviously represents compulsive behavior, but little information is available about this. More investigations into this sort of compulsivity around exercise are needed.

There seems to be more of a tendency for exercise abuse in some who are probably predisposed to psychological disturbance, especially those without a strong self-identity (Dishman, 1985). Cross-sectional studies do not show an increase in psychopathology though, so the incidence of this may be low, or it may be specific to a small number of individuals. Competitive athletes appear to be particularly at risk for both overtraining and pathological weight loss efforts, which may approach or even become of clinical significance. Heightened physical activity is also a common feature of eating disorders such as anorexia nervosa. Exercise can clearly, despite its

generally salutary effects, become a compulsive activity for some individuals.

As Nudelman (1988) stated, "Like weight control, exercise could be viewed as falling along a continuum from reasonable efforts to maintain fitness to a lifestyle of exercise and preoccupation with fitness that is out of proportion to the expected benefits of exercise," (p.626). There seems to be a syndrome of unhealthy exercise addiction where one will exercise despite medical, social, work or other reasons not to do so.

What is not known at this time is the etiological mechanism which converts some persons from "normal" exercisers into addicted, compulsive ones, or eating disordered (and compulsive) individuals. Some have argued that this is to some degree inherent in the activity, and, with time and degree of exertion, most will fall prey to the pathology. The causal mechanism is far from clear, however; those studies which have attempted to blame the activity have been correlational, not experimental or even quasi-experimental. At this time, we do not even have accurate figures on the prevalence of pathological compulsive exercising. We have thus identified the existence of problematic excessive exercising or exercise addiction, which affects some physically active individuals. Now we must discover who these susceptible people are, how they develop the problem, and how to prevent it.